What is claimed is:

1. A method for delivering a gene in a system for delivering DNA specifically to tumor tissues under anaerobic conditions, wherein a bacterium belonging to the genus *Bifidobacterium* is used as a gene delivery vector and then the DNA delivered specifically to tumor tissues under anaerobic conditions is expressed in said tumor tissues.

2. A method for delivering a gene in a system for delivering DNA specifically to tumor tissues under anaerobic conditions, wherein a bacterium belonging to the genus *Bifidobacterium* and having the DNA coding for a protein which has a higher activity than in its parent strain is used as a gene delivery vector and then the DNA delivered specifically to tumor tissues under anaerobic conditions is expressed in said tumor tissues.

3. A method for delivering a gene in a system for delivering DNA specifically to tumor tissues under anaerobic conditions, wherein a bacterium belonging to the genus *Bifidobacterium* transformed with a recombinant DNA having said DNA is used as a gene delivery vector and the DNA delivered specifically to tumor tissues under anaerobic conditions is expressed in the tumor tissues.

4. The method as claimed in any one of Claims 1 to 3, wherein the DNA is selected from the group consisting of:
(a) DNA coding for a protein having an antitumor activity, and
(b) DNA coding for a protein having an activity of converting

a precursor of an antitumor substance into the antitumor substance.

5. The method as claimed in Claim 4, wherein the protein having an antitumor activity is interleukin-2.

6. The method as claimed in Claim 4, wherein the precursor of an antitumor substance is selected from the group consisting of 5-fluorocytosine, 5-aziridino-2,4-dinitrobenzamide, ganciclovir, a glucuronic acid-conjugated antitumor substance and a lysine-conjugated antitumor substance.

7. The method as claimed in Claim 4, wherein the protein having the activity of converting a precursor of an antitumor substance into the antitumor substance is a protein selected from the group consisting of cytosine deaminase, nitroreductase, herpes simplex virus type 1 thymidine kinase and β-glucuronidase.

8. The method as claimed in Claim 3, wherein the recombinant DNA is an expression vector.

9. The method as claimed in Claim 8, wherein the expression vector has a promoter and a terminator functioning in a bacterium belonging to the genus *Bifidobacterium*.

10. The method as claimed in Claim 9, wherein the promoter and terminator are those involved in expressing a gene coding for histone-like DNA-binding protein (HU protein) derived from *Bifidobacterium longum*.

11. The method as claimed in Claim 9, wherein the promoter

and terminator are DNAs located at the 1- to 192-positions and at the 472- to 600-positions respectively in the nucleotide sequence set forth in SEQ ID NO: 1.

12. The method as claimed in any one of Claims 1 to 11, wherein the bacterium is *Bifidobacterium longum*.

13. The method as claimed in any one of Claims 1 to 4 or 6 to 12, wherein the bacterium is *Bifidobacterium longum* 105-A/pBLES100-S-eCD (FERM BP-7274).

14. A method for expressing a gene coding for a protein having an antitumor activity in tissue tumors specifically, which comprises use of the bacterium as claimed in any one of Claims 1 to 5 or 8 to 12.

15. A method for expressing a gene coding for a protein having the activity of converting a precursor of an antitumor substance into the antitumor substance in tissue tumors specifically, which comprises use of the bacterium as claimed in any one of Claims 1 to 4 or 6 to 12.

16. A pharmaceutical composition comprising the bacterium as claimed in any one of Claims 1 to 13.

17. The pharmaceutical composition as claimed in Claim 16, wherein the pharmaceutical composition comprises a combination of the bacterium as claimed in any one of Claims 1 to 4 or 6 to 13 and the precursor of an antitumor substance.

18. The pharmaceutical composition as claimed in Claim 16, wherein the pharmaceutical composition comprises the

bacterium as claimed in any one of Claims 1 to 4 or 6 to 13 and the precursor of an antitumor substance.

19. The pharmaceutical composition as claimed in any one of Claims 16 to 18, wherein the bacterium is *Bifidobacterium longum*.

20. The pharmaceutical composition as claimed in any one of Claims 16 to 19, wherein bacterium is *Bifidobacterium longum* 105-A/pBLES100-S-eCD (FERM BP-7274).

21. A bacterium belonging to the genus *Bifidobacterium*, which is used in the method as claimed in any one of Claims 1 to 13.

22. *Bifidobacterium longum* 105-A/pBLES100-S-eCD (FERM BP-7274.

23. DNA having the nucleotide sequence set forth in SEQ ID NO: 1.

24. A method of treating a solid tumor, which comprises use of the method as claimed in any one of Claims 1 to 15.

25. A method of treating a solid tumor, which comprises administering the bacterium as claimed in any one of Claims 1 to 4 or 6 to 13 in combination with the precursor of an antitumor substance.

26. An anaerobic bacterium belonging to the genus *Bifidobacterium* capable of expressing a gene coding for a protein having an antitumor activity in only cancer cells under substantially anaerobic conditions.

27. An anaerobic bacterium belonging to the genus *Bifidobacterium* capable of expressing a gene coding for a protein having the activity of converting a precursor of an antitumor substance with low toxicity to humans and animals into an antitumor substance in only cancer cells under substantially anaerobic conditions.